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JANUARY 1984

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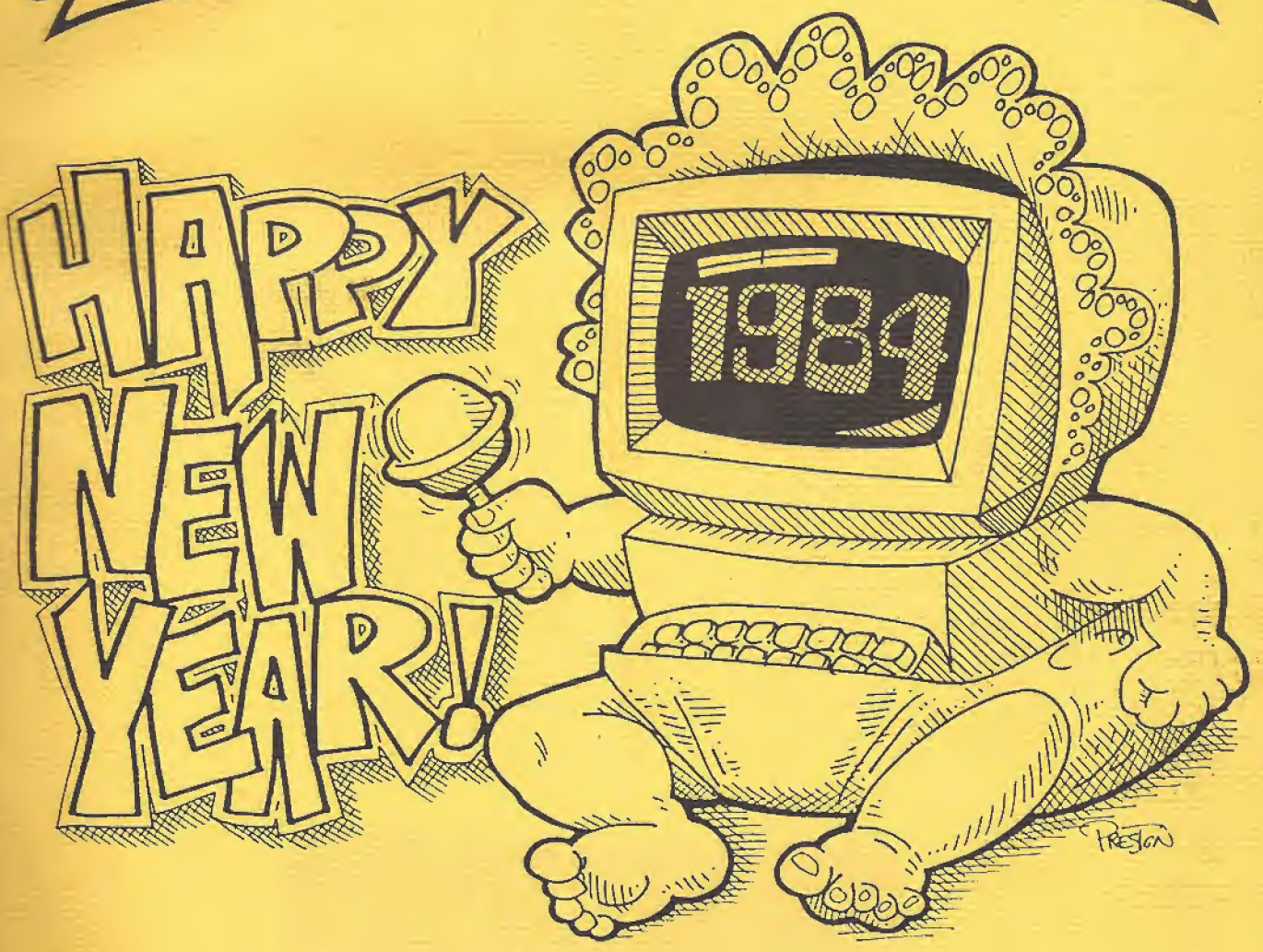

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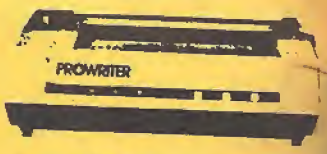

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SU	MO	TU	WE	TH	FR	SA
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

CONSORTIUM CALENDAR

JANUARY 1984

FEBURARY 1984

SU	MO	TU	WE	TH	FR	SA
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29			

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
1 Happy New Year	2	3	4	5 M3G EXEC CHAOS BASIC SIG	6	7
8 CMTUG	9	10 TI USERS HEATH SIG	11 OSBORNE SIG	12 LACC	13 FRIDAY THE 13TH	14
15 ENERGY deadline	16	17	18 M3G	19 CHAOS ASM SIG CHAOS BASIC SIG	20	21 CHAOS
22	23	24 UPCO (IBM PC)	25	26 CP/M SIG	27	28 APPLE LUG
29	30	31				

ABOUT ENERGY

ENERGY is published monthly by the Michigan Computer Consortium (MC^2), P.O. Box 1302, East Lansing, Michigan 48823. **ENERGY** is distributed to members of the computer clubs affiliated with MC^2, and is sold at finer local retailers.

ABOUT THE MICHIGAN COMPUTER CONSORTIUM

The Michigan Computer Consortium (MC^2) was formed in 1983 to sponsor joint activities involving computer clubs affiliated with MC^2. Current members of MC^2 are:

CHAOS (Capitol Hill Atari Owners' Society)
CMTUG (Central Michigan TRS-80 Users' Group)
Lansing TI Users Group
M3G (Mid-Michigan Microcomputer Group).

Information about each of these clubs is published elsewhere in **ENERGY**.

EDITORIAL BOARD

Dennis Cullinan	(CMTUG)	351-2175	Editor
Ike Hudson	(CHAOS)	351-3092	
Rob Peck	(CHAOS)	887-0327	
Joe Werner	(M3G)	337-7415	

ADVERTISING

Advertising in **ENERGY** is an economical way to promote your products or services to a key audience involved in personal computing. Three sizes of ads are available: business card, half-page, and full-page. Advertising space is limited and controlled, so that ads will never get "lost". Camera-ready copy is needed by the 15th of the month preceeding publication. For more information, contact the Editor.

ARTICLE SUBMISSIONS

Persons wishing to submit articles are encouraged to do so! Articles may be submitted electronically via CompuNet, or in camera-ready form (3.5 inch columns, 16 characters per inch), or in other forms. Contact any member of the Editorial Board. The deadline for all articles is the 15th of the month preceeding publication.

VIEW FROM THE TOP

by Joe Werner
President, M3G

At the December Executive committee meeting, the officers and members present discussed the upcoming club elections. The recommendation of the Executive Committee was:

The club should ELECT four officers:

- President
- Vice-President
- Secretary
- Treasurer

The President appoints, with club approval, the following committee heads:

- Program Chairman
- Newsletter Chairman
- MC^2 delegate
- MACC delegate

The officers, together with the committee chairmen listed above and the chairmen of the SIGs (who are elected by the SIGs), constitute the Executive Committee. This proposal was approved at the December meeting, and the four offices listed will be filled at the January meeting.

Officers and members who are enthusiastic and energetic are essential to the growth and development of the club. M3G has come a long way in the past two years that I have been President, and the credit goes to the officers and members who have contributed so much.

As I have previously announced, I will not be a candidate for re-election as President. I feel that two years is an ample amount of time, and believe that it's time for someone else to take the reins.

If you think you would be interested in running for an office or in volunteering for one of the committee posts, contact an officer. If you have questions about the duties and responsibilities of the posts, contact an officer. The club can be everything we the members want it to be, but it's up to us to make it so!

Finally, with the holiday season past, and a new year beginning, let me express the wish that the year ahead brings health, happiness, prosperity, and happy computing to all.

Upcoming meetings are:

- Wednesday, January 18, 1984. (NOTE different day)
- Thursday, February 9, 1984. (NOTE second Thurs.)

ABOUT M3G

Mid-Michigan Microcomputer Group (M3G) is a non-profit organization of computer hobbyists, enthusiasts, and users in the Lansing and Mid-Michigan area. Formed in 1975, M3G is the oldest personal computer organization in the area. Membership in the club is open to anyone with an interest in personal computing.

MEETINGS

General membership meetings are held each month, generally on the third Thursday of each month (barring scheduling problems), at the East Lansing Public Library, at 7:30 pm. Visitors are welcome at any meeting.

DUES

Annual dues for M3G are $12.00, for 12 consecutive months. Family memberships (two or more people at the same address, receiving only one copy of the Newsletter) are available. The first member pays full dues; additional members each pay $1.00 per year.

To join M3G, come to any meeting, or send one year's dues with your name and address to: M3G, c/o P.O. Box 1302, East Lansing, MI 48823.

AFFILIATIONS

M3G is a member of the Midwest Affiliation of Computer Clubs (MACC), and of the Michigan Computer Consortium (MC2).

NEWSLETTER

M3G members receive ENERGY, published by the Michigan Computer Consortium, as a benefit of membership.

SPECIAL INTEREST GROUPS (SIGs)

M3G currently has three active Special Interest Groups: the Osborne SIG, the Heath/Zenith SIG, and the CP/M SIG. These SIGs hold additional meetings as their members wish, and may charge SIG dues in addition to M3G dues if the SIG so decides. SIG meetings are announced in the Meeting Calendar in ENERGY. Additional SIGs may be formed on any computer-related topic which M3G members may want.

OFFICERS

President	Joe Werner	337-7415 349-0200 (days)
Vice President	Lee Hodges	669-3258
Secretary/Treasurer	Lynn Wardwell	645-2214
MACC Trustee	Frank Dolinar	351-1899
CP/M SIG Chairman	Greg Martin	484-5850
Heath SIG Chairman	Bill Goodwin	349-9657
Osborne SIG Chmn.	Jim Pease	332-8746

MBASIC UTILITIES

Sooner or later most of us fall prey to temptation and try to write a program in MBASIC. Fortunately many recover without ill effects. There are always a few of us, though who continue trying to write programs in spite of all common sense. This article is directed to those unfortunates who are addicted to programming in MBASIC and would like to add a few useful MBASIC utilities to their bag.

If you have ever attempted to 'adjust' another persons program you have probably found it nearly impossible to follow the logic. There are several public domain utilities useful for these situations. They are called cross-reference utilities. There are a total of four cross-reference utilities in the Osborne library: VMAP, MXREF, MAP and MBXREF. All make some sort of listing of the variables used in a program along with the line numbers where these variables are used. This is a great aid to find out where that other programmer used each variable and to try to follow the program logic. MBXREF also provides a list of line numbers referenced by statements such as GOTO or GOSUB. Although there are a few bugs it works rather well considering the price. I suspect that a debugged and compiled version is now on the market for around $70.

Another problem encountered with some programs from other people is that of multiple statements on one line. While this is great for improving speed and reducing the amount of memory needed for a program it also makes the program almost unreadable. One way to solve this is with MBEAUT, an MBASIC 'beautifier'. It expands such packed programs to place one statement on a line and puts REMark statements at points referenced by GOTO and GOSUB statements. This aids greatly when you are trying to figure out just what a program does.

Another program acts to somewhat repack such 'expanded' programs. MBREM removes all those REMark statements from a program to recover the memory used storing them. This can often result is a significant gain in program speed and available memory. One project I work with has two versions of each program; a REM version and a BAS version. The REM version is fully commented for easy modfication and debugging. The REM lines are then removed to form the BAS version for actually running the programs. In addition multiple statements are combined on each line to further reduce the memory overhead.

A final MBASIC utility is UN. Remember the Protect feature of MBASIC? You can save a program in Protected form after which it is impossible to list or modify that program. Great for keeping prying eyes away from your work but bad if you need to modify it. Along comes UNprotect. This handy little utility permits you to unprotect a protected BASIC program. That's all there is to it. By the way, the associated test program is the most intriguing little MBASIC program I have seen in a long time.

WANTED

A public domain MBASIC program packer. This program should remove all REM lines and combine multiple statements on each line where program logic permits. Contact the OSIG librarian (T.Stilwell) at 355-2320 (days) or 349-5861 (eves).

The above program will nicely round out the collection of MBASIC programming tools. With these utilities writing, modifying or debugging MBASIC programs becomes a breeze. Since these are all public domain, their only cost is your time to copy them!

Just for fun here are a couple of MBASIC tricks to help with your programs. The first is a simple two line subroutine to convert lower case letters to upper case. For economy it can easily be put into one line.

```
X$=INPUT$(1)
IF ASC(X$)>96 AND ASC(X$)<123 THEN
   X$=CHR$(ASC(X$)-32)
```

Now for the adventurous, a little bit of cursor addressing. This consists of pushing the cursor around the screen to print things where you want instead of just going down from line to line. For the Osborne you can use a fairly handy function or just print the same items.

```
DEF FNSCR$ (ROW%,COL%)=CHR$(27)+CHR$(61)+
    CHR$(32+ROW%)+CHR$(32+COL%)
```

Now just PRINT FNSCR$(ROW%,COL%) to move the cursor to ROW% and COLUMN% on the screen.

T. Stilwell

****** COMING MEETINGS *******

11 January	**Osborne ZCPR2 Enhancement**
	Cheryl Tirone
9 February	**Patching Your WordStar**
	Tom Stilwell
7 March	to be announced

E. Lansing Public Library - 7:30 PM

OSIG is the Osborne Special Interest Group of M3G. All OSIG meetings are open to the public. You are welcome to bring your computer, also. Public domain software is available for copying at no charge to OSIG members. Contact Jim Pease at 332-8746 for more information.

H/Z SIG NOTES

by Bill Goodwin

CP/M-86 for the '100 does exist! I have a copy and demonstrated it at the December meeting of the H/Z-SIG. It is not your average version of CP/M-86 though. Like Godbout's CP/M-816, it will handle both 8 and 16 bit programs. For most uses this means you don't need CP/M-85. The vast majority of programs will run under CP/M-86. But some will not. According to Software Wizardry, DBASE II will not operate properly. I have had some trouble with Magic Wand. Twice, in about 12 hours of use, the program has dropped back to the system prompt. I was using the cursor arrow keys both times. Programs that relocate themselves to high memory are also supposed to be prime candidates for trouble.

There is another way of obtaining CP/M-86 for the '100. Barry Watzman has a modification kit for the version of CP/M-86 that Digital Research sells for the IBM PC. The mod. kit and CP/M-86 sell for $99.97. (The Heath version, with HUG discount, is $200.) You do lose something. It is not an 816 type.(no 8-bit software) There is no RDDOS.CMD. (This program transfers ZDOS files to CP/M, complements RDCPM.COM on ZDOS) The most serious problem is that it does not use the same disk format as Heath's version. This means no compatibility with CP/M-85 disks.

If you have seen articles on Microsoft's 'Windows' you may be interested to know that Heath/Zenith is one of those that have signed up to use them. No rumors yet on when this will be available.

Rumors, rumors, rumors! Heard about the Z-150? Supposed to be a portable, IBM work-alike with only the 16 bit processor. Further rumor says that it will run the Microsoft Flight Simulator program, which indicates it really does act like an IBM. According to a message on the HUG BB on compuserve Zenith had an 8087 add-on at the COMDEX computer show but it wasn't running when the author stopped at the Zenith booth.

One note on the 8-bit ability of CP/M-86. I have a program called HRUN.COM which simulates HDOS under CP/M-80. I ran HRUN then called up Benton Harbor Basic. Worked just fine. That meant BH Basic was running under two levels of simulation on CP/M-86. (I wonder if a simulator for ZDOS is available for HDOS? naw, forget it! That's TOO crazy!)

Heath now has an informational bulletin board on the air. It will provide info on software products, helpful hints, sample programs, and general information. It will be running 24-hr.,7 days/week at (616) 982-3503. I haven't tried it yet so I have no idea what it is like.

-- LATE FLASH --

Terry Jensen of HUG will be the speaker at our March meeting. He will discuss HUG, the HUG BBS on compuserve and anything else he can think of. For those who drop in on the HUG BBS Terry is the HUG sysop. That meeting will be Sunday, March 11 at 1:00 PM.

COMPUTERS ON TV

Have many of you have been following the British series *The Computer Programme* on public television channels? If so, you will be interested to know that a sequel series has been produced and will begin airing this month on WKAR-TV, Channel 23. The first weekly segment will appear on Monday, January 16th at 1 PM, with a repeat on Tuesday at 6 PM. This sequence will be followed for the ten weeks of the series' run. Catch it if you can, and alert your friends to this well-done computer literacy effort.

'MAKING THE MOST OF THE MICRO'

Program 1
THE VERSATILE MACHINE
Contrary to popular view, microcomputers are not just for playing games on. A hands-on demonstration shows the differences between loading a program on cassette or floppy disc.

Program 2
GETTING DOWN TO BASIC
How do you actually write a computer program in BASIC? Mac introduces the three fundamental structures of any computer program: sequence, branch and loop.

Program 3
STRINGS AND THINGS
The microcomputer handles words as well as numbers. The micro is teamed with an ordinary commercial printer, and Mac demonstrates a series of variations on a standard business letter.

Program 4
INTRODUCING GRAPHICS
Different makes of microcomputers have different capabilities of generating graphics: lines, color and movement on the screen. Certain fundamental principles are, however, common to all.

Program 5
KEEPING A RECORD
One of the most important things a computer can do is to organize and sort through a mass of information. Mac shows how to organize a database on a microcomputer and discusses its limitations.

Program 6
GETTING DOWN TO BUSINESS
A whole range of software is available for business uses. Programs to handle specific functions such as accounting, word processing and so on are available in bewildering variety. This segment offers some simple tips to help the novice identify poor programs.

Program 7
SOUNDS INTERESTING
How does a microcomputer make music? A musician demonstrates the commands that enable the micro to make simple sounds, and describes the kind of hardware and software needed to make and edit compu-music.

Program 8
EVERYTHING UNDER CONTROL
One of the most important potential uses of a microcomputer is in the monitoring and controlling of events and objects in the real world.

Program 9
MOVING PICTURES
It is not always necessary to use the keyboard to put information into the computer, and not always necessary to use a screen for output.

Program 10
AT THE END OF THE LINE
The telephone and the micro are natural partners, linking the micro user with large public and private databases, and with other individuals. The micro also offers other channels to the outside, through telesoftware for example, a system where computer programming is transmitted to the user via a broadcast television signal.

Moral Clarity in the Computer Age

by Peter J. Denning

editorial

Ever since the movie *WarGames* appeared in June 1983, the national media have been abuzz with stories about "computer hackers," the new breed of computer-addicted youth, some of whom amuse themselves by using modems and terminals to get unauthorized access to computers. Unable themselves to resolve clearly the moral and ethical issues, or to obtain clear guidance from the computing profession, media journalists have posed questions but have offered no answers:

- Is it wrong for someone to break into a computer if he has no intention of harming anything?
- Are the builders of systems and managers of installations at fault for not providing adequate security?
- Is breaking into a computer a prank, a pecadillo, or a crime?
- If the intruder is under 21 years of age, is he a juvenile delinquent or a whiz kid?
- Should the perpetrator, youthful or otherwise, be praised for creativity or castigated for malice?
- Should the apprehended intruder's offer to be employed as a security consultant be regarded as extortion or a golden opportunity?

Some writers dismiss these episodes as a rite of passage for bright kids with computers, the modern equivalent of yesteryear's hot-wiring of an automobile. Kids will be kids, they say: as if hot-wiring were ever morally acceptable. [See, for example, "Teen Computer Break-Ins: High-Tech Rite of Passage," by M. Schrage, *Washington Post*, 21 August 1983.]

Then, in late August, came word of the break-in to the VAX 780 computer at the Sloan-Kettering Cancer Institute in New York City. Because this system contains records of cancer patients receiving radiation therapy, and is also used by doctors around the country to get dosage information, this intrusion, this tampering, shined a stark new light on the issue. People's lives were at stake! A young member of the Milwaukee "414 hackers" club was indicted in late August for tampering with the Sloan-Kettering computer.

Avoiding the Issue

Despite this chilling incident, the computer profession and the media have been unable to come to grips with the fundamental questions of this problem. The remarkable *Newsweek* of September 5, 1983, illustrates perfectly. The cover shows a half-smiling young man sitting before his TRS-80. Beneath him is the legend, "414 hacker Neal Patrick." Above him is a taunting question: "Trespassing in the information age—pranks or sabotage?" In case you forgot, Patrick is the hacker questioned by the FBI in late June and later granted immunity from federal prosection; the "414 club" is suspected of having broken into more than sixty business and government computer systems in the United States and Canada. Concerning these incidents, there has been no response from the computing profession.

But the bulk of the article—about 45 percent (70 of about 156 column-inches)—is an uncritical, if not admiring, discussion of Patrick and six other hackers. The authors conclude with the statement: "Deterrence is not going to be easy as long as the media glorify hackers like the 414s as the Robin Hoods of the information age." This coy sentence distracts, almost, from *Newsweek*'s own treatment of the issue.

What's Right?

In their fascination with the methods and personalities of the "whiz kid hackers," many media writers avoid reporting, much less seeking, computer-field leaders' positions on the fundamental question: Is breaking into a computer system wrong?

There is guidance aplenty for insight into this moral enigma. Suppose someone picks open your front door and spends the day browsing through your house. How would you react? Suppose someone jimmies your car, takes it for a ride, and returns it to its parking place. How would you react? If you're like most people, you will consider these intrusions on your private property as plainly wrong. Moreover, you are unlikely to think them less wrong if the intruder used a particularly clever way to break in.

Suppose someone breaks into your business premises and snoops through your file cabinets; would you consider that wrong? Now, suppose you transferred the information from the cabinets to a disk store and the intruder uses the computer room console terminal to do

In their fascination with the "whiz kids," many media writers avoid the fundamental question: Is breaking into a computer system wrong?

The article says these capers "raise disturbing new questions about security and privacy," but offers no answers. Part of the article does focus on better methods of security—for example, avoiding unprotected service maintenance accounts, using dial-back modems, or encrypting files. Another part of the article asks whether there is a legal basis for declaring such behavior prosecutable—for example, traditional breaking-and-entering statutes mention only homes, other dwellings, or premises, but not computers. (Actually, twenty-one states now have computer crime laws, many of which make computer break-ins crimes.)

Editorial continued

his snooping; is that wrong? Come to think of it, what difference does it make where the terminal is located? Would you still consider it wrong if the terminal were in the next room? Next building? Next city? The intruder's home? If you're like most people, the answer to all these questions is yes.

Suppose someone breaks into your business office and uses your long distance telephone; is that wrong? Suppose he breaks in and makes long distance calls by using your computer's console terminal and the dial-out equipment; is that wrong? Suppose he breaks into your computer via a dial-in port and makes long distance calls with your dial-out equipment; is that wrong? If you're like most people, the answers are yes. (Incidentally, many of the malicious "network hackers" do exactly that: look for ways to route electronic mail through somebody else's computer, or illegally through the ARPANET, in order to avoid paying long distance telephone charges).

So if the rest of us can see that breaking into a computer, snooping through databases, and using somebody else's long distance lines is wrong, why do so many media journalists and even people in our own field have trouble seeing this? Perhaps the answer lies hidden in the words of the MIT employee quoted by *Newsweek*. Respecting information stored in computer files, he said: "We [hackers] don't believe in property rights."

Action

Even though breaking and entering is wrong, prudent people take precautions to protect their property from the inevitable wrongdoers. To remind its customers of this simple fact, GTE Telenet sent its customers in late August a letter pointing out a few simple steps that would have stopped the 414s:

- Change all passwords from the default mode. (These include remote maintenance, administration, and systems programming passwords.)
- Promptly delete user names and passwords that are no longer valid.
- Remove temporary passwords such as "demo" and "test".
- Assign someone to watch for abnormal usage patterns.

Yet, short term precautions do not absolve us from facing the fundamental question in the long term. We need to devote more time to reminding our children, students, employees, and colleagues of the simple moral principle being challenged here: respect for the right others have to their private thoughts, domains, personal information, and property. This is the basic issue.

CONSUMER OUTLOOK

OPPOSED TO CHANGE?

by Howard D. Rabotnick

I know. You want to rush out and buy some of the new equipment on the market, and upgrade that system. But before you part with all of your hard earned bucks, pause and consider this. Many computer enthusiasts have a tendency to want to "keep up" with the latest products, etc. It's probably driven deep into us as children to have only the new things. The auto makers never fail to tell us each October how we need to trade in on the new and improved model. Well, before you go and spend all the money on a new computer, it is wise to decide whether you really need a new computer, or is it feasible to keep your present system in use. There are many good arguments to not buy. Here are just a few of them.

Does your old computer still perform the tasks that you need to do? If you are constrained by memory size, maybe all you need is an inexpensive RAM expansion. Some computers allow you to add more powerful processors, such as the Z-80 or 16 Bit series. This may cost less than a new computer. Also, maybe a new software program would add new life to the drudgery of that old program you dislike. Many of the same programs can be run on the older models as well as the newer ones. Often, by adding a new expansion board or peripheral, you can simulate the newer computers and run their software. The point is that if your old computer still works, and does the tasks that you want to do, and does them smoothly, why go and change everything now? Also, consider your software and library investment. It may be true that the cost of your equipment has gone down considerably since you bought it. However, if you move out of it, and into something else, you might just lose a lot more. You might even have to start from scratch with the new system. Is there even a good trade in or resale market for your old hardware and software? These all need to be considered in the decision of whether to upgrade your present system, or to replace it completely.

Some people want to be the first to try something new. I can name many hardware and software items, as well as concepts that turned out to be total disasters. The companies that turn out new products, in a sense, use such people as voluntary product testers. In other words, you are the guinea pig for the manufacturer. Also, many new products, when recently released, contain many flaws and bugs which are corrected in later model revisions and product updates. How will those who have the inferior versions be compensated or adjusted? My rule of thumb with any new hardware is to wait at least 3 to 4 months to see how others respond to it, and to determine whether it really is such a hot item. Furthermore, many new trends may or may not turn out to be successful in the long run. Today, integrated software packages with multiscreen windows driven by cursor controllers called mice are the hot item. I'm not saying these are good or bad, but I would definitely not be the first person to spend that kind of money on an idea which has still not been totally proven in the marketplace. I would at least wait until it looks like all the bugs are out of these products.

In conclusion, I believe that if you own a quality piece of equipment to begin with, you should try to gain as much utility from that product as possible, and only when you have exhausted its potential value should you consider a new computer purchase. The computer bug has "bitten" all of us by now, and like they predicted, everyone will soon have a computer in their homes or businesses. But this doesn't imply that you must keep up with the latest technology in computers in order to achieve your personal computing objectives.

I'd like to have your viewpoints to share in this column. From time to time, I'll cover some of the latest trends in personal and business computing. I'll leave the product reviews to the reviewers, and concentrate on providing timely news and tips on how to get the most computing power from your dollar. Your questions and comments will help keep this column current and informative. Please address these to the CHAOS post office box listed elsewhere in this issue.

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CMTUG NEWS

CMTUG SURVEY

The results of the CMTUG survey are in! We had 15 people respond (shame on you who didn't). Four of them had more than one TRS-80, and interestingly enough, all four of them had a Model 100 and a CoCo. Eight respondents have Model I's and eight have Model III's. In descending order, from that point, four have CoCo's, four have 100's, three own Model 4's, one owns a Model II and one has a Model 16. Eleven respondents have modems and 14 have disk drives. Reported uses for the computers include nine for hobby, eleven for personal, nine for business, five for education, and three for other uses.

The comments included "good job on *Energy* magazine", "like new format", and "want to see more demos".

The surprises in the survey include the number of Model I's still in active service, and the business use by so many owners. It looks like the club is made up primarily of users rather than programmers. It looks like the change in meeting format from club business and rumor exchange, to active demonstrations was a good move. We thank all of you who responded; those who would like to add their voices to this 'conversation' are welcome to do so. We want CMTUG to serve members' needs and wants, but we need to know what they are first!

Wanted: We need users of database management software (other than *AIDS* or *Profile III*), to round out our February demonstration. Please contact Dennis Cullinan at 751-2175 evenings, or leave a message on BabbleNet (485-5222) or CompuNet (339-3367).

BOOK REVIEWS

Stephen Gray: "The TRS-80 Model III user's guide", Creative Computing, Dec83, p. 355. Reviews the book by Tony Bove and Leroy Finkel.

----:"TRS-80 Model III assembly language", Creative Computing, Dec83, pp. 355-356. Reviews the book by Hubert S. Howe, Jr.

----:"TRS-80 Color BASIC", Creative Computing, Jan84, pp. 295-296. Reviews the book by Bob Albrecht.

----:"Learning TRS-80 BASIC for Models I, II/16 and III", Creative Computing, Jan84, p. 296. Reviews the book by David A. Lien.

SDI for TRS

Here's a new term for most of you: Selective Dissemination of Information (SDI). It is the service of providing notice of newly published information on selected topics to a selected audience. CMTUG members have enjoyed(?) this service for some time, first in the pages of *CMTUG News* and now in *Energy*. We try to scan a number of magazines for items of interest to TRS-80 users, with the assumption that most of you regularly read the mags that specialize in TRS-80 products ... *80Micro*, *Computer User*, and *Basic Computing*. Most of the magazines cited in this column can be seen at the Library of Michigan or other public libraries in the area. Here's the latest crop:

Alan Burnes: "Xedit: an editor for BASIC", Creative Computing, Dec83, pp. 92, 93. A review of a quick and easy BASIC program editor for TRS-80 Model I & III.

Joe Devlin: "Graphics and music for the Color Computer". CReative Computing, Dec83, pp. 97, 98, 101. A review of *Semidraw*, a graphics program for the CoCo.

Monte Schultz and Steve Arrants: "Infocom does it again ... and again". Creative Computing, Dec83, pp. 120, 123, 125. A review of *Planetfall*, a text adventure game for TRS-80.

Terry Benson: "Domestic vs. import". INterface Age, Dec83, pp. 54, 55, 57, 58, 60. A comparison of Tandy's TRS-80 Model 100 and the NEC PC-8201 lap-size computers.

Tim Daneliuk: "Review: CP/M 2.2 from Montezuma". InfoWorld, 5Dec83, p. 86. Favorable review of the first CP/M available for the TRS-80 Model 4.

Scott Mace: "Q & A: Mark Yamagata", InfoWorld, 26Dec83, p. 91. An interview with Tandy's director of merchandising for personal computer products.

Stephen B. Gray: "TRS-80 Strings", Creative Computing, Jan84, pp. 290-293. This month's column gives brief reviews of *Pascal80 Trial Version* by New Classics Software, and *Data-Writer* by Software Options, both for TRS-80 Models I, III and 4.

----"TRS-80 Strings", Creative Computing, Dec83. Discusses the Color Computer2, the 64K Extended BASIC Color Computer, the *Family Tree* genealogical program, and other topics.

TRS-80 MODEL 4 INFORMATION

by Jack Decker

[Reprinted from Northern Bytes, July/August 1983]
[Updated by the author - 11/23/83]

This is the result of a few hours of research into the inner workings of the Model 4, for users that would like to use some of the Mod 4's added features from the Mod III mode (in no particular order):

1) The 4 MHz speed is toggled on or off by bit 6 of port 0ECH (236 decimal). BASIC uses memory location 16912 as a "mask" for port ECH (which also controls such things as the screen clock display, cassette relay, 32 character mode, etc.). So, to go to 4 MHz without lousing up anything else, from BASIC READY type:

POKE 16912, PEEK (16912) OR 64

If you execute this from within a BASIC program and want it to take immediate effect, you'll have to follow the above statement with:

OUT 236, PEEK (16912)

While on the subject of port 0ECH, it should be noted that bit 5 of this port is no longer used to disable video wait states, as it was in the Model III.

2) Radio Shack does not always fully decode all of their ports. Rather, it appears that bits 0 and 1 are ignored in some cases. Therefore, an output to port 84H, 85H, 86H, or 87H will accomplish the same thing.

3) So why is port 84H important? Because it controls the 80 column and inverse video display modes, as well as all memory mapping and the shift between the "Model III" and "Model 4" modes. The bit pattern for port 84H is as follows:

Bits 0 & 1: Memory mapping, select Mod III/Mod 4 modes
Bit 2: If on, 80/40 column video display is selected
Bit 3: If on, ASCII 80H - FFH are inverse characters
Bits 4, 5, & 6: Memory bank select control for 128K RAM machines
Bit 7: If on, lower half of video is mapped to 3C00H - 3F7FH

Now to explain a bit further. First, bit 3 is the simplest to use. If you execute an OUT 132,8 instruction, you'll find that the character set represented by 80H - FFH are the exact duplicates of the corresponding characters in 00H - 7FH, except that bit 7 set indicates reverse video. This selection takes precedence over any other selection (such as Japanese Kana characters, etc.).

Bits 2 and 7 control the 80-column display. When bit 2 is set, the first 400H screen positions can be considered as "page 1" and the remaining 380H positions as "page 2". Each "page" is accessed through memory locations 3C00H-3FFFH (in the Model III mode only), but if bit 7 is reset the upper part of the page is accessed, while if bit 7 is set the lower portion is used. This isn't really useful from BASIC, since the ROM video driver assumes a 64 character line and a full 400H byte display "page", and acts accordingly regardless of the actual circumstances. On the other hand, I have written a new video driver routine (called VIDEO4, and available through The Alternate Source) that can be "patched in" to the Mod III BASIC and that handles the 24 x 80 format properly (however, it does not work correctly with NEWDOS/80 or Model III LDOS, due to a problem that will be discussed later).

Bits 0 and 1 control the memory mapping for the first 64K of memory in the computer. The pattern is as follows (assuming that bits 4, 5, and 6 are all zero): If both bits 0 and 1 are zero, computer is in the Model III mode, with all memory mapped as in the Model III. If bit 0 is one and bit 1 is zero, memory is still mapped as in the Model III (keyboard and video in same places) but the ROM has been replaced by RAM(!). If both bits 0 and 1 are one, computer is in the Model 4 mode and all memory is RAM (keyboard and video are not mapped to memory at all). If bit 0 is zero and bit 1 is one, the keyboard and video display are mapped to the top 3K of memory (1K for the keyboard, and 2K for the video display). Changing either of these bits is guaranteed to crash the system if done from within Model III BASIC. Best advice: If you don't know what you're doing, leave these two bits ALONE (both zero in Model III mode).

Bits 4, 5 and 6 control how the expansion memory (the second 64K) is mapped into memory. The following patterns are used (these are for bits 6, 5, 4 - note the REVERSE order):

1,1,0 - First 32K expansion mapped to 0000H - 7FFFH
0,1,0 - First 32K expansion mapped to 8000H - FFFFH
1,1,1 - Second 32K expansion mapped to 0000H - 7FFFH
0,1,1 - Second 32K expansion mapped to 8000H - FFFFH

If none of the expansion memory is being mapped into the Z-80's addressing scheme, all three bits will be zero. Once again, if you don't know what you're doing, it's best to leave these bits undisturbed!

4) The added keys are mapped to memory location 3880H, which is only used by the two SHIFT keys in the Mod 3. For those that want to update their keyboard maps, it looks like this:

	bit 0	bit 1	bit 2	bit 3	bit 4	bit 5	bit 6	bit 7
3880H:	LSHFT	RSHFT	CTRL	CAPS	F1	F2	F3	unused

The ROM keyboard driver has been modified to decode the F1 key as ASCII 96 decimal (SHIFT-@, making it in effect a "PAUSE" key for BASIC). F2 is decoded as 27

decimal (same as a SHIFT-up arrow, and can be used to escape from the insert function of the EDIT command), and F3 is decoded as 8 decimal (the backspace character, handy in the upper right-hand corner just above the "9" key of numeric keypad!). The function key definitions can be changed by the user, by simply POKEing the desired ASCII values to be returned by F1, F2, and F3 into memory locations 41EBH, 41ECH, and 41F3H respectively.

The CTRL and CAPS keys work just the way you'd expect, and work in addition to the SHIFT-down arrow and SHIFT-0 keys that accomplish the same functions in the Model III (in the Mod 4, for example, you can use either the SHIFT-0 or the CAPS key to toggle the caps lock function). Memory location 41F4H is used as a keyboard "row" storage location for the SHIFT, CAPS, CTRL, and function keys (in a manner similar to the way memory locations 4036H - 403CH are used as "row" storage locations for other keys on the keyboard). The "repeating key" feature does not function with any of the keys in this row (including the function keys!).

5) The lower 12K of the ROM (0000H - 2FFFH) is exactly the same as in the Mod III (even the bugs are still there, so I figure that Radio Shack must have bought a ton of Model III ROMs and don't want to lose their investment). However, the upper 2K of ROM (3000H - 37FFH) has been somewhat modified. In particular, the I/O re-router routine (which was not used by BASIC, and almost never used by other programs) is no longer present in the Model 4 ROM, the keyboard scan routine has been significantly altered (to enable the added keys), and some of the other routines within the upper 2K of the ROM have been moved around, or changed slightly. Most calls to the upper 2K are made though a series of vectors that begin at 3000H, and these have not been changed except that the jump to the I/O re-router routine at 3027H-3029H has been changed to a RET instruction followed by two NOPs. Note that if you need to determine whether your progam is running on a Model III or a Model 4, you can PEEK at location 3029H, as follows:

IF PEEK (12329)=0 THEN ... (running on Model 4)

What this all means is that the Mod 4 really IS 99.44% compatible with existing Mod III software (remember, there were two versions of the upper 2K ROM in the Mod III, so it never was safe to jump into the middle of it).

6) I understand that the Model 4 Technical Manual is now available, and folks that have seen the proofs have told me that it is FANTASTIC!!! It covers both the hardware and TRSDOS 6.x software.

7) Version 6.1 of TRSDOS is now available, so hurry on down to the Shack and get your upgrade, if you haven't received it already. However, you don't have to be afraid of TRSDOS 6.0, the folks at Logical Systems have said that it has NO major bugs and that there will be NO changes in the operation of the system from the user's viewpoint. From what I understand, the purpose of the revision is mostly to clean up some code and perhaps add a couple of enhancements. TRSDOS 6.1 was finished last summer, but has been slow in reaching the local Shack stores, possibly because TRSDOS 6.0 owners could use what they had without fear (maybe Tandy learned something from 1.0, 1.1, 1.2, 1.3...).

8) Here's something to get you thinking about the possibilities of using the Model 4 in the Mod III mode. Use an Editor-Assembler to assemble this code:

```
F000            00100          ORG     0F000H
F000 F3         00110 START    DI
F001 210000     00120          LD      HL,0000H
F004 110080     00130          LD      DE,8000H
F007 01FF6F     00140          LD      BC,6FFFH
F00A EDB0       00150          LDIR
F00C 3E01       00160          LD      A,1
F00E D384       00170          OUT     (84H),A
F010 210080     00180          LD      HL,8000H
F013 110000     00190          LD      DE,0000H
F016 01FF6F     00200          LD      BC,6FFFH
F019 EDB0       00210          LDIR
F01B C32D40     00220          JP      402DH
F000            00230          END     START
```

The purpose of this code is to allow you to place the Model III ROM into RAM (along with your disk operating system). Why would you want to do that, I hear you ask. Well, try assembling the above code, then save it to disk and execute it. Then go into BASIC and type a SHIFT-right arrow to get you into 32 character mode. Now type ?"XXXXX"POS(X)"XXXXX". Since five characters are printed before the POS function is executed, the number returned should be 5, right? So why does it return a not-so-perfect 10? Congratulations, you've discovered a BUG in the Model III ROM. Up until now, there was nothing you could do about it, but try typing in this:

POKE 841,16: POKE 842,66: POKE 844,4

Now try that POS function again! It works! You've altered the ROM to suit yourself! NOTE: Port 84H is used here and has other uses as well (see the above paragraphs). When bit 1 is set, RAM is mapped into the ROM space, but with the keyboard and video mapped into their normal places. However, you must move BASIC and your operating system into high memory (the top 32K, 8000H or higher), then do the ROM/RAM "flip", then move BASIC and your O/S back down. One other note: when you do this, you may be surprised to find that BASIC destroys the first few bytes of RAM (approx. 0000H - 0006H). This doesn't matter UNLESS you try to use the DOS "BOOT" command, which won't work! Push the RESET button if you want to reboot.

Now the unfortunate news: Both NEWDOS/80 and the Model III version of LDOS will write garbage into the ROM area during certain disk operations (any operation that

creates, kills, or changes a disk file could send the system off to never-never land when the ROM has been relocated to RAM). This is the reason my VIDEO4 program doesn't work with these DOSes - it moves BASIC into RAM and patches it so that functions such as TAB, POS, PRINT@, SET/RESET/POINT, and the screen print function all work correctly. TRSDOS 1.3, MULTIDOS, and DOSPLUS 3.5 all seem to leave the ROM area intact, however, so use one of those three DOSes if you want to experiment with changing the ROM code. If you happen to find out how to patch NEWDOS/80 or LDOS so that it leaves the ROM area alone, by all means PLEASE let me know!

By the way, this moving of the ROM code into RAM could have other uses besides altering BASIC, some of which could potentially make all present methods of disk protection absolutely useless (especially if a little hardware tweaking was done, so that pressing the RESET button would not automatically flip the "real" Model III ROM back into place)...

I hope that all of this info helps someone to use these "hidden" features of the Mod 4! Now, a couple of editorial thoughts on the Model 4. I suspect that most users, at least initially, will use the Model 4 in the Mod III mode, partly because there is so much existing Model III compatible software around, but also because of some of the design "features" of TRSDOS 6.0 (the DOS designed by Logical Systems, Inc. for the Model 4) and the version of Microsoft BASIC included with the Model 4.

For starters, your programs written in Model I/III BASIC have about a 95% chance of not running properly under Model 4 BASIC. The main reason is that the version of Microsoft BASIC designed for the Model 4 is VERY picky about spaces! Remember all that nice, memory-saving code you wrote? Have fun inserting spaces between each variable, reserved word, etc. For example, a line such as:

```
FORX=1TO1000:PRINTX;:NEXT
```

will have to be expanded to something like:

```
FOR X=1 TO 1000: PRINT X;: NEXT
```

before it will run properly. Actually, the problem may not be as bad as all that, since there may be a way to convert Mod I/III programs without having to go in and manually insert spaces (if there isn't now, I'm sure that there will be very soon, since it would be an easy program to write). Model 4 BASIC is NOT fully compatible with Model I/III BASIC, although both are written by Microsoft. However, some of the commands are different, some new ones have been added, and some old ones have been dropped.

As an example of "dropped" commands, there are NO cassette-tape routines in DOS or BASIC, except for a utility program that will read Model 100(!) tapes. Once again, I'm sure that sooner or later someone will recover the fumble, and write a utility to read Model I/III tapes while operating in the Model 4 mode, but in the meantime, in order to read a Model I/III tape you have to boot up a Model III DOS (NOT included with the Mod 4!), load in the desired program, save it to disk (in TRSDOS 6.0 readable format, please, which translates to "single density" unless you're using LDOS as your Model III DOS), boot up TRSDOS 6.0, and read the program in from the disk.

My biggest complaint about TRSDOS 6.0 is that it is not exactly what you would call a user-friendly DOS in some areas. For example, if you want specify a hexadecimal address, under most DOSes you'd simply write something like 7000H (or even 7000h if you're too lazy to press the SHIFT key). Under TRSDOS 6.0 you have to write X'7000'. I don't like that! Like its predecessor, LDOS, TRSDOS 6.0 has many features not found in any other DOS. However, some of them are more suited to operation in a business environment and can be anything from simply useless to a pain in the neck when the home computer user runs up against them.

Yes, I am fully aware that there are many users that simply <u>love</u> LDOS (possibly in some cases it's more of a love/hate affair?) and will undoubtably find TRSDOS 6.0 even more "lovable", however, I suspect that at least a few Model 4 buyers will make quite a bit of use of the Mod III mode (possibly with enhancements to the video driver to permit use of the 24 x 80 display mode, such as my VIDEO4 program) for the time being, and wait until NEWDOS/80 or MULTIDOS or DOSPLUS comes out in a Model 4 version to begin making use of the advanced features of the Model 4. I, for one, would like to see a version of TRSDOS 6.x that is more user-friendly and a version of Microsoft BASIC that restores some of the "missing" BASIC commands and that is not so picky about spaces, but for some reason I don't expect to see either of those in the near future.

The bottom line is that the Model 4 is a great microcomputer that will fully emulate a Model III, and has a lot of nice "extras" which will no doubt be fully exploited by smart programmers in the coming months!

One final comment - I have seen this as a "rumor" in other newsletters, well, now you're getting it from a newsletter editor who lives on the U.S./Canadian border and visits the Shack stores on both sides. Both the Model 4 and the new Model 4P, as sold in the U.S.A., have a black and white CRT, just like the Model III. However, the Models 4 and 4P as sold in Canada have a CRT with a <u>green</u> phosphor! There is no other difference that I can see in the two versions. Potential Model 4 buyers in the U.S. may want to hold off until Tandy decides to give us a green phosphor CRT, like they do in Canada (I wouldn't hold my breath, though). Since replacement green phosphor CRTs cost somewhere in the $80-$90 range, I'd feel a bit gypped with the old-style black-and-white TV picture tube!

I don't know why Tandy didn't put the green phosphor CRT's in U.S. models (I have heard that if you order a replacement CRT for the Model II/12/16 from R/S National Parts, a green CRT sells for less than a black & white. Can anyone confirm this)? Anyway, after Tandy unloads their existing stock of B&W CRT's on us suckers in the U.S., they will probably announce a "new improved" Model 4 with green CRT at a reduced priced to boot (That's not inside info, just an educated guess based on Tandy's previous track record). What really strikes me as a case of corporate insanity is the introduction of the Model 4P with a black & white screen here in the U.S. - I can understand that they may have had a warehouse full of twelve inch B&W CRT's that they wanted to use up, but Tandy has never made a computer with a nine-inch screen before, so they must have bought the nine inch black and white tubes especially for the U.S. market! Why, Tandy?? I would bet that the use of the old-fashioned black & white screen will surely hurt the sales of the 4P, and I think that if I were a Tandy stockholder, I'd invite the person that made that decision to seek employment elsewhere - like at the south pole during the winter, so he can see how dull black and white can get after a while!

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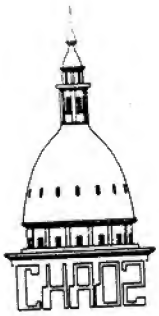

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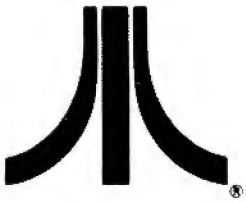

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DARN @%&! WHERE'S THAT ARTICLE ?
BY Mike Aldrich

CHAOS has for the past 1 1/2 years received newsletters from about 3 dozen other computer clubs. 1983 has brought in a rich selection of newsletters containing everything you'd want to know about your ATARI computer. Well the following list of articles are present in the newsletters indicated and are at you disposal if you desire.

SUBJECT	DESCRIPTION	CLUB	DATE
OSA+	REVIEW	PACE	DEC 83
BYPASSING 810 WRITE PROTECT	HOW TO	PACE	DEC 83
FILEMANAGER 800+	PROCEDURES	SCAT	DEC 83
MY FIRST ALPHABET	REVIEW	SCAT	DEC 83
SPELL WIZARD	REVIEW & PROCEDURES	ABACUS	NOV 83
PRINT USING	SUBROUTINE	ABACUS	NOV 83
PRINTER DRIVER	MAKE A FACE FOR OTHERS	ABACUS	NOV 83
ATR8000 INTERFACE	REVIEW	ABACUS	NOV 83
ATARI (RAMMER)	PROGRAM	ABACUS	NOV 83
DISK UTILITY PGMS	COMPARISON OF 5	ABACUS	NOV 83
SPELL WIZARD	REVIEW	ICEBERG	DEC 83
QUICKFIX	REVIEW	KCACE	NOV 83
PRINTER COMMANDS C-ITOH STARWRITER	QUICK REFERENCE SHEET	LOMPOC	DEC 83
PRINTER COMMANDS EPSON FX-80	QUICK REFERENCE SHEET	LOMPOC	DEC 83
WORD PROCESSORS	A COMPARISON	SNACC	DEC 83
COMMODORE VS ATARI	A COMPARISON	HACE	DEC 83
DRAW A ROSE	PROGRAM	HACE	DEC 83
SOUND (HIGH QUALITY)	CABLE CONSTRUCTION	HACE	DEC 83
GAME LODE RUNNER	REVIEW	HACE	DEC 83
GAME RALLY SPEEDWAY	REVIEW	HACE	DEC 83
GAME PIT STOP	REVIEW	HACE	DEC 83
GAME ADVENTURES	HINTS	HACE	DEC 83
LANG ACTION	REVIEW	HACE	DEC 83
GAME MR. COOL	REVIEW	HACE	DEC 83
GAME AE	REVIEW	HACE	DEC 83
GAME PINBALL CONST	REVIEW	HACE	DEC 83
GAME DONKEY KONG	REVIEW	HACE	DEC 83
DEMO CHRISTMAS TREE	PROGRAM	HACE	DEC 83
LANG ASSEMBLER 6502	LESSON	WIRETAP	NOV 83
MEMORY MOSAICS 64K	REVIEW	WIRETAP	NOV 83
PROGLIB	LIST	WIRETAP	NOV 83
LANG BASIC	INSTRUCTIONAL	JACG	NOV 83
LANG BASIC	PLAYER MISSILE GRAPHICS	JACG	NOV 83
GAME NECROMANCER	REVIEW	JACG	NOV 83
GAME BLUE MAX	REVIEW	JACG	NOV 83
GAME TRIAD	REVIEW	JACG	NOV 83
LANG FORTH	INSTRUCTIONAL	JACG	NOV 83
LANG FOR ATARI	REVIEW	JACG	NOV 83
LANG BASIC	INTRO TO PROGRAMMING	LACE	DEC 83
DISK DRIVE MOD#2	HARDWARE MODIFICATION	AACE	NOV 83
DISK DRIVE	COMPARISON	AACE	NOV 83
GAME INCHANTER	REVIEW	AACE	NOV 83

Hopefully soon, I will have a cross-reference database available that can be accessed using the PROGLIB program. This database will give the members of CHAOS a way to find information in the newsletters pertaining to their particular interest. All the best articles will then be at the tip of your fingers.

SUBJECT	DESCRIPTION	CLUB	DATE
PROGLIB	LIST	AACE	NOV 83
ART (SCREEN)	MATHMATICAL FORMULAS	ARINC	NOV 83
NEWSLETTER ARTICLES	LIST FROM SEP 83-OCT 83	ARINC	NOV 83
ART ARCHIMEDES	CIRCLE GRAPHICS	ARINC	NOV 83
BOOK REPORT	ADV TECHNIQUES FOR ATARI	APL	OCT 83
COMM CHEAP MODEM	REVIEW	STATUS	NOV 83
LANG BASIC	GRAPHICS 0 COLOR	STATUS	NOV 83
DISK MODIFY 810	WRITE PROTECT OVERRIDE	PACUS	NOV 83
GAME ZAXXON	REVIEW	PACUS	NOV 83
DISK WOES	SLOW DOWN TROUBLE	PACUS	NOV 83
LANG BASIC	GRAPHICS FUN	PACUS	NOV 83
PRINTER GEMINI 10X	REVIEW	TOLEDO	NOV 83
LANG BASIC XL	REVIEW	LAACE	OCT 83
HARDWARE	REVIEW	LAACE	OCT 83
BUSINESS	INSTEAD OF GAMES	LAACE	OCT 83
ATARI COMPUTER CAMP	REVIEW	LAACE	OCT 83
REVIEW	BOOKS,MAGAZINES,ETC	LAACE	OCT 83
HARDWARE	BASIC ON/OFF MODIFY	SNACC	OCT 83
CARTRIDGES	SUPERCARTRIDGES REVIEW	APL	SEP 83
EDUCATION	ATARI TEACHERS NETWORK	APL	SEP 83
PRINTERS	REVIEW (GOOD)	APL	SEP 83
LANG FORTH	AN INTRODUCTION	WIRETAP	OCT 83
GAME SPACE ACE	PROGRAM	WIRETAP	OCT 83
EDUCATION	TEACH THE HANDICAPPED	SCAT	OCT 83
GAME CLIPPER ADV	REVIEW	SCAT	OCT 83
LANG BASIC	GRAPHICS 0 SCREEN DUMP	SCAT	OCT 83
LANG VISICALC	KEYPAD	HACE	SEP 83
LANG COMPILER	BASM	HACE	SEP 83
HARDWARE	ATR8000 REVIEW	HACE	SEP 83
PRINTER	REVIEW DYNAX DX-15	HACE	SEP 83
HARDWARE BUSI-KEY	REVIEW	HACE	SEP 83
LANG DOS 3.0	REVIEW	HACE	OCT 83
PRINTER	EPSON GRAPHTRAX PGM	HACE	OCT 83
CAMP ATARI	COMPUTER CAMP REVIEW	HACE	OCT 83
LANG BASIC	SCREEN DUMPS II	HACE	OCT 83
GAMES REVIEW	TENNIS,SOCCER,HOCKEY	PACE	NOV 83
GAMES REVIEW	FOOTBALL,BASEBALL,BAJA	PACE	NOV 83
BUSINESS	HOMECALC REVIEW	PACE	NOV 83
HARDWARE	MONITOR CABLE REVIEW	PACE	NOV 83
PROGLIB		PACE	NOV 83
PRINTER PROWRITER	PROGRAM LISTER	PACE	NOV 83
LANG BASIC	MULTI-GRAPH PROGRAM	PACE	NOV 83
COMPUTER REVIEW	COMPARISON OF ATARIS	PACE	NOV 83
PRINTER REVIEW	1027 LETTER QUALITY	ACCESS	NOV 83
HARDWARE REVIEW	INTEC 48K BOARD	SBACE	NOV 83
LANG ACTION	REVIEW, USE, ETC	SBACE	NOV 83

FOR SALE:

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For Sale: Voicebox II-the singing voicebox for the Atari. Includes games and demo on disk. Almost new only $85.##. Call Ike Hudson (517)351-3092.

Treasurer's Report

by Bob Peck

As of mid-December when I'm writing this report, CHAOS has 129 active members. I hope to see us come close to the 150 mark before the end of the year. We can do it if the big December, members-only, Christmas meeting attracts the crowd we expect. We had 13 new members join at the November meeting.

Due to the continuing (I hope) press of new members joining, and current members renewing at meetings, I have accepted Sandy Thiesen's gracious offer of help. Sandy will serve as Chief Membership Taker during meetings. Please look for her and direct any potential new members to her. Also, direct yourselves to her for renewals.

Speaking of renewals, the Board of Directors has instituted a change in policy for expiring members. In the past, your last newsletter was marked. If you failed to renew, we sent you one more copy, as a courtesy, with another plea to renew. We have now started warning members on their next-to-last copy and will repea t the warning on the last issue. You will still get two notices to renew on your newsletter labels, we've just shifted the timing a month. Please take heed when your warnings appear!

Basic User Group

By M. Aldrich

The Nov 17 meeting covered the programs assigned at the previous meeting. Some members got most of them done, while others only completed a couple. The programs were put on the blackboard then the concept of Program Design was discussed (WHAT goes WHERE). The assignment for the next meeting was to write a program using as many of the basic commands covered as possible.

The Dec 01 meeting consisted of an open session for strictly questions and answers generated by the previous assignment. Towards the end of the meeting ERROR messages were discussed and how to interpret them was explained.

At the Dec 15 meeting, BUG will start examining the SOUND, PLOT, and DRAWTO statements. Anyone planning to attend should study these commands before the meeting.

All meetings are held at Foster Community Center, Room 210 from 7pm to 9pm, the 1st and 3rd Thursday of each month. All CHAOS members (their families too) are welcome to attend.

REVIEW

THE 1027 LETTER QUALITY PRINTER

by Bob Haynes

REPRINTED FROM SACREMENTO ACCESS KEY

If you were at the October meeting, you saw a quick demonstration of the New Atari 1027 letter quality printer. This printer is the answer to the maiden's prayers for some Atarians; for others, it would be a complete waste of time and money.

Open the manual that comes with the printer. The first words you see are, "SIMPLICITY ITSELF". That pretty well sums it up. The 1027 is simple to set up, simple to use, and simple in the functions it performs.

SETTING IT UP: 1) After unpacking the unit, plug the power adapter into an outlet. 2) Connect the unit to any Atari or peripheral via the input/output (I/O) cable. This involves two of the very few choices you will have to make in using the 1027. 3) Remove the top cover and snap in the ink roller, if it hasn't already been done at the store. Replace the cover, being sure to put it on right-side up.

USING IT: Loading paper is all done manually. The 1027 accepts only standard 8-1/2 inch or less width paper. No tractor feed paper, unless you tear off the perforated selvage. It also makes no provision for roll paper, though some enterprising souls will doubtless rig up such devices. The steps for loading paper are very nearly the same as those used on any typewriter. There are no buttons for setting form length, automatic line feed, or end-of-form cutoff. In fact, there is only one button, the on/off switch located conveniently on top of the printer, on the right and near the front.

FUNCTIONS AND LIMITATIONS: To begin with, the 1027 has several limitations:

*You cannot change type fonts or sizes. No italics. No condensed or elongated type. Only 12 characters per inch, the elite size on many typewriters (see FIGURE 1).

*You cannot print graphics. An international set is available, but only on the new XL line of computers, and not the 400/800.

*It is much slower than most dot matrix printers of comparable cost. (But probably no slower than some of the lower priced letter quality ones.) If you have a dot matrix printer, it is wise to use that for draft copies.

*Since there is no end-of-form controller, you must monitor the number of text lines per page. Too many lines, and the 1027 will print the excess lines over the last line of paper it can feed (see FIGURE 2).

*You cannot use paper more than 8-1/2 inches wide.

On the other hand, the 1027 has some features that will make it highly attractive to those with specific printing needs:

*It does not suffer from print fade. The inking cartridge, one presumes, gives nearly uniform print darkness throughout its life. It is easy to replace, and probably not as expensive as a ribbon.

Goodbye, MACE!

by Rob Peck

CHAOS has severed all ties with MACE, the Detroit-based Michigan Atari Computer Enthusiasts. To many of our newer members, this news won't mean much, so let me give you a little history.

In the beginning, Ike and Guy (with a little help from me) created LANCE. No, not Lance Ward (that's a bit beyond us), but LANCE, the Lansing Atari Computer Enthusiasts. Nobody knows what the 'N' stood for anymore. It soon turned out that we couldn't register the name LANCE with the State because somebody had beaten us to it. This lead to the birth of our own, familiar CHAOS.

In the beginning, CHAOS was void and without form, so the founding members, recruited from local Atari outlets, wrote and adopted a constitution. At this point in time, Ike was putting out a sporadic, one- or two-page, photocopied newsletter. We needed a better communications vehicle, but felt we were too small and poor to do it right.

Enter MACE on a white horse. They were large (500+ members) and had an outstanding newsletter. They offered to 'adopt' us as an outstate branch and mail their newsletter directly to our members each month with our news in it. This sounded like the perfect solution, so we agreed.

Things never did quite work out as planned. We had serious trouble getting new members added to the subscription list. Our news almost never appeared in the MACE Journal. And, over the months, the Journal showed up later and later and got duller and duller. Some of these problems were at least helped by CHAOS, but the net effect was less than desirable.

Eventually, we decided to make the MACE membership optional and started our own newsletter, CONTROL. We now belong to MC2, the Michigan Computer Consortium, and contribute to their newsletter, Energy. I was very proud of Control and am even more pleased with Energy. We are getting a more vital and interesting product than the current MACE Journals by a long shot, in my opinion.

This left us with some members, mostly the founders or people from out-of-town, who continued to take advantage of our low-cost, combined membership offer to join both CHAOS and MACE. This was working out fairly well on a dwindling basis, although we still had problems getting MACE to get new subscriptions rolling.

However, a few months back (by the time you read this), MACE changed the ground rules and upped the ante. The price increase was relatively small, but the ground rule they changed was delivery. Instead of mailing a copy to each of our MACE members, they drop-shipped the whole bunch of them to me, UNLABELLED! If any of you missed the November meeting and are looking for your October MACE Journal, they're in our trunk at Foster. This, combined with the very small percentage of our members who still showed an interest in MACE, led the Board of Directors to cut our ties with MACE.

DISK DRIVES ARRIVING

by Ike Hudson

Disk drives have finally started being delivered. This will come a s good news to those at the top of the waiting lists, and hopeful news for those not so high up on the list.

The Rana 1000 s being delivered are all double density. There appeared to be no other operational changes or enhancements. Rana is sending letters to those with the single density drives to let them know how to get upgraded.

The most impressive drive I have seen is the INDUS GT. Not only did they deliver the first drive when they promised, but the drive looks great. The GT should be the standard. It is double/enhanced/single density. It may be the quietest, smoothest drive available for the Atari. It looks like the pictures used to advertise it.

The front panel has real buttons to push for the protect on/off, drive configuration, track and error. That is a far sight better than those Rana switches that work sometimes, if you push hard enough. I am still not convinced that any of these swithces are useful, but if they are provided they should work. It has a nice little lever door that allows you to get your disk in and out without pushing your drive off your desk. The front is covered by a smoked plastic door. It must be seen to be appreciated.

Indus did not have the software ready yet. They provided an IOU for software that included a word processor, data base, spreadsheet and special DOS. They will also be sending dividers for the carrying case that make it into an 80 disk storage case. That's right, I didn't tell you about the carrying case yet. This is the first drive I have seen that comes with a carrying case.

The INDUS has a one year parts and labor warranty. That is worth a little extra.

To put it simply, I am impressed by the Indus GT disk drive. The retail of the Indus GT, Rana, and the Trak are all $449.00. You can expect the Trak and Indus to cost a little more than the Rana after discounts. The Indus is well worth the difference. The Trak has too much TV interference to be worth it and the Rana has a lousy door and disks tend to jam when putting them in.

The Rana sells for less, and should. The Trak sells for more than the Rana and shouldn't. The Indus sells for more, and is definitely worth at least $25.00 more than the other two.

*The 1027 does one specialized job which even the best dot matrix printers to not do: produces perfect typed copies for submission to fussy readers like college professors, business executives, and publishers.

*The cost is reasonable: $350, as opposed to the $600 to $3,000 you can pay for other letter quality printers.

*It is a relatively quiet machine.

*It takes up little space on the desk and is easily transportable.

*It can plug directly into any Atari computer or daisy chain into any combination of modems, disk drives, or interfaces made for the Atari.

*With its two I/O ports, it can be hooked up with two separate systems at once, opening up some intriguing possibilities (e.g. keying in text on one computer, while the 1027 is printing out text from another).

*It supports the Atari Word Processor; Atari-Writer without the APX printer driver (though you have to tell AtariWriter a little white lie --that it is sending text to the 1025 dot matrix printer); Letter Perfect; and probably Text Wizard and Bank Street Writer, although I did not get a chance to test these last two.

Out of curiosity, I ran some comparison checks on the 1027 with a couple of dot matrix printers. The 1027 cost $350, compared with $1,000 two years ago for the now-discontinued Atari 825 (Centronics 737-1) and $550 one year ago for the Prowriter (C.Itoh 8510A). The footprint for each machine (the space it takes up on the desk) is interesting to compare: the 1027 occupies 93 square inches; the 825 takes 169 square inches; and the 8510A uses 177 square inches. The 1027 weighs 5 pounds; the 825, 11 pounds; while the 8510A scales in at a hefty 17 pounds.

Advertised speeds for the three printers are as follows: 1027: 20 cps (characters per second); 825: 80 cps; 8510A: 120 cps. Multiply by 10 for words per minute, and you have advertised speeds of 200, 800, and 1,200 respectively.

Actual speeds in words per minute proved considerably slower than advertised for all three machines:

1027: 90wpm on a difficult test sample; 95wpm on an easy sample

825: 280wpm, using 10 CPI; 417wpm, using condensed (16.7CPI)

8510A: 570wpm, using condensed (16.7CPI).

The 8510A is the only one of the three machines that will print graphics. Conclusion: the speed and versatility of a printer increase with its volume and mass.

The 1027 is not for everyone. If you don't need letter quality, you're better off with a dot matrix printer. If you have $1,500 kicking about to spend on a printer, the Printmaster or the Starwriter from Leading Edge are far faster (40 to 55 cps advertised speeds).

The 1027 fits my needs for perfect copy at a faster rate than I can produce same on a typewriter. I expect years of yeoman service from this solidly-built little workhorse.

(Note on the type size of this article: The foregoing text was reduced to 3/10 the size of the original to fit the column requirements of this newsletter.)

COMPUTER WARGAMING

by Vance Bowers

No, I'm not talking about the movie. I'm not talking about arcade games with war themes. Computer wargames are games of strategy.

Most wargames are called simulations, since they try to reconstruct actual situations and then let you command one of the parties involved. Could you have stopped the Japanese at Midway, Napoleon at Waterloo, or Lee at Gettysburg? You can get your chance, albeit with varying degrees of accuracy and difficulty, for little more than the price of an arcade game.

Simulations are available for most time periods and 'future histories' at both the tactical (small squad) and strategic (army or fleet) scale. The largest variety of games are available for WWII buffs, as they are also the largest group of wargamers. But whatever your area of interest is, there's sure to be something for you.

While almost all of the wargames are capable of solitaire play, the most enjoyable play comes against another person. While the computer is just as good (or better) as an opponent, there's just nothing that can replace the post game 'bull session.'

For this reason, I am trying to organize a wargamer's group. The group is open to all persons interested in playing or learning more about wargames, irregardless of the computer you own. I will be attending the January C.H.A.O.S. meeting and hope to meet and talk to those interested. If you will not or cannot attend the meeting, but would like more information, I can be contacted after 5 p.m. at 371-1427.

If you're looking for something new and challenging for your computer, and enjoy games that use strategy and skill instead of luck and dexterity, wargaming might be what you're looking for. But watch out!!! You might learn a little about history, and yourself.

"Well... I guess that program wasn't compatible with my computer!"

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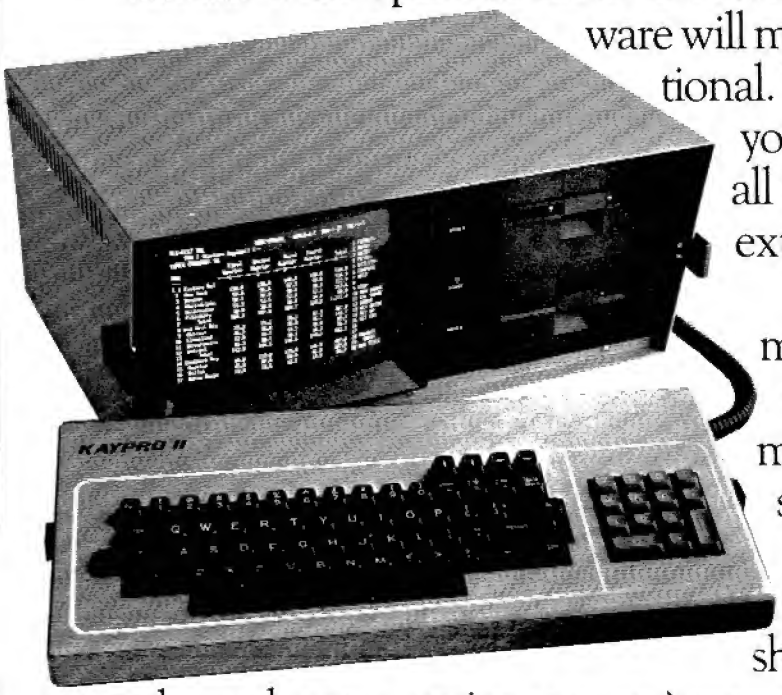

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BUMPAS REVIEWS

FREE SOFTWARE FOR YOUR ATARI is a $9 book from Enrich/Ohaus Computer Books, 2325 Paragon Drive, San Jose, CA 95131. Most members of user groups will not need the information that user groups make available public domain software to members for little or no cost.

ACE members will be pleased to read the "mini-profile" on our club. They do misspell Ali Erickson's name, and they omit to mention me as co-editor of the newsletter. They credit Mike Dunn as both editor of the newsletter and president of the club.

Useful information in the book includes a directory of approximately 250 Atari user groups, about 50 addresses for organizations involved in educational uses of the computer, 20 newsletters and magazines, and 18 pages of telephone numbers of various bulletin boards.

In the middle of the book are about 60 pages taking the reader step-by-step through the operation of modems, terminal programs, and accessing bulletin boards. Detailed articles review Jonesterm, Amodem, Amisterm, and Miniatrm. A short, 20 line listing of an RS-232 handler is provided in the book. This listing is necessary to open the serial port on the 850 Interface for communication. There is a lot of useful information in this book for a reasonable price.

BASEBALL

I have two baseball games to review this issue. They are both excellent, and if you can believe it, quite different. How different can two baseball games be? Let me count the ways.

STAR LEAGUE BASEBALL $32 from Gamestar requires 32k disk and devotes a lot of effort to "chrome". By this I mean it succeeds in giving the user a lot of the "feel" of being at a real baseball game. Several tunes are played during the game, including a couple of bars of the Star Spangled Banner at each game's start. Players are asked to stand. Trivia questions and major league scores are shown on the scoreboard between innings.

One or two players may choose a lineup of sluggers or "liners" (liners get hits more easily), and a fastball or curveball pitcher. Each pitcher has a repetoire of 8 pitches delivered with the joystick. Pitchers get tired as the game progresses, and they find it harder to pitch strikes. A relief knuckle-ball pitcher is available inthe 8th inning.

The screen shows the ballfield as viewed from the upperdeck along the deep rightfield foul line. Pitches and fly balls are accompanied by a shadow. To catch a fly ball, the fielder must be moved to where the ball and shadow approach each other.

The lead base runner is controlled at all times. Real squeeze plays may be run. Runners behind the lead runner will not run unless forced until the lead runner is put out or crosses home plate. Throws to the infield are never missed by the fielders. The score may be displayed at any time. This game is a lot of fun to play without having to develop a lot of skill first.

INHOME BASEBALL is $49.95 and comes on a 16k cartridge. Two players are required, although no disk drive is needed. This game is designed for real players. The screen shot is from overhead at home plate. All pitchers and batters perform identically — skill in the game is entirely up to the players.

Pitches are controlled by the joystick. Throws may be made to any defensive player — even the outfielders! The fielder is selected with the joystick, and sometimes a player will select the wrong one. Second base is particularly hard to hit. I throw to the outfield too much. If the receiving fielder is moved off the line of the throw at a 90 degree angle, he may miss the throw. Throws will not go over any fielder's head, so movement within the line of the throw will not cause a problem. The outfielder nearest a hit ball is not automatically activated, but must be selected before the ball may be picked up.

All base runners may be controlled by the player, so all runners may be set in motion at one time. Or individual runners may be selected for stealing bases or advancing. Leading off is possible, but a step beyond a short leadoff and the runner will continue to the next base. The player cannot turn the runner around.

The Arcade Machine for $60 from Broderbund lets the user create autoboot disk-based arcade games of the user's own design. As long as the user is willing to work within the constraints of the program, he will find a good outlet for the urge to create original arcade games.

The program provides easily accessible menus which drive several modules. One module is a character and animation editor. Here the characters ("shapes") are edited and animated. Another module is the "path" editor. This is where the shapes are told how to move on the screen. There is a background scene and title page editor. There are editors for adding sound and music and changing colors. The game being created may be run at any time during the creative process in order to see how things are going.

****
REWARD! ! !
****

FREE LIBRARY DISKS FOR GETTING ADS!!

You can get free library disks from the largest "public domain" library in the world. I am referring to the combined CHAOS (Atari), M3G (CP/M), and CMTUG (TRS-80) libraries. All you have to do is convince any retailer, wholesaler, vendor, manufacturer, or whomever to place an ad in the "ENERGY" newsletter.

For every new half page ad you recruit from someone who has either never advertised or has not advertised in the last 6 months, you will get of one free library disk. Full page ads get you two disks of your choice.

This is your chance to help yourself while helping your clubs. When you drum up advertising, you bring down the cost of printing, and earn yourself some free disks. This offer is limited to current members of CHAOS, CMTUG, and M3G, and each new advertiser, regardless of repeat business, can be used only once.

ADVERTISING IN ENERGY

The Magazine of the Michigan Computer Consortium (MC2)

MC2 publishes "ENERGY" on a monthly basis. ENERGY is mailed to all members of the Capitol Hill Atari Owners' Society (CHAOS), Central Michigan TRS-80 Users Group (CMTUG), and the Mid-Michigan Micro computer Group (M3G - includes members with IBM, Osborne, Commodore, TI, Heath-Zenith and many other computers), to other similar computer clubs around the world, and sells over the counter in the Lansing/Central Michigan area.

Over 700 issues were produced and distributed for the October premiere issue. 600 issues were distributed in November. At least 300 are mailed to members in the Lansing area each month.

Advertising rates are $18.00 per half page (8" X 5 1/4" or 4" X 10 1/2") or $30.00 per full page (8" X 10 1/2"). We also offer a special business card (2" X 3 1/2") ad for only $5.00. All ads must be paid for when submitted.

If you have not placed an ad in ENERGY before, we will offer you the opportunity to run the same full-page ad for two consecutive months for only $40.00 total (paid with the first ad). This saves you $20.00 and gives you the opportunity to evaluate the effectiveness of advertising in ENERGY. If you need to make a change before the second ad is run, then we must charge an additional $3.00 to offset our added printer set-up charges.

Special long-term contract rates are available, if you would like to contract for six months. This reduced rate contract also gives you the advantage of knowing that your cost will not go up for that period of time if we raise our rates. Rates are subject to change when our costs or our distribution increases. A full page for six months is $25.00 per month for the same ad all six months. Add $2.50 for each month that a change is made to the ad. The first ad must be accompanied by payment for that ad. We will bill you for the remaining five if you prefer.

Placement of ads in the newsletter is the sole decision of the editor, but consideration will be given to advertiser requests. Space is available on a first come, first served basis.

If you would like additional information, then contact Dennis Cullinan (517) 373-7513 or (517) 351-2175 or Rob Peck (517) 887-0327. Or you can mail ads to:

Michigan Computer Consortium
ATTN: Advertising Manager
P O Box 16132
Lansing, Mi 48901

The deadline for all submissions is the 15th of the preceeding month. All submissions must be photo ready (black and white) with payments.

NEWSLETTER SALES POLICY

In order to encourage the distribution of ENERGY, we are giving dealers a very liberal resale offer. Stores that would like to sell ENERGY will receive at least a 50% profit margin. The cover price will be $1.50.

Our return policy is also very liberal. We will accpet returns of up to 50% of the order or 5 issues, whichever is greater. The store will be charged for the issues at the rate designated for issues kept. (example: order 40, return 20--refund is $25 - $13 = $12) The first order will be paid for when ordered. On standard monthly orders, the payment will be due upon receipt of the newsletters. A bill will be included with standing orders. Old issues may be returned for credit after 3 months. The MC2 Treasurer will issue a check or credit memo for issues returned. No issues over 6 months old may be returned.

Use the following order form to receive copies of ENERGY on a regular basis. Please include payment for the first order with this form. Payment is due for additional standard monthly orders upon receipt of the newsletters.

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LANSING TI USER GROUP

WHO: Owners and operators of the Texas Instruments 99/4A Home Computer in the greater Lansing area.

WHAT: Intended to expand the knowledge and utilization of the TI 99/4A through the establishment of a formal organization of owners and users. This is being accomplished through the coordinated efforts of a Program Committee, Library Committee, Equipment Committee, and an Educational Committee.

WHEN: Currently we meet on the second Tuesday of every month at the Marine Corps Reserve Center, 1620 E. Saginaw Street, Lansing MI 48912.

HOW MUCH: Membership dues for the TI User Group are $20.00 per year per family.

INFORMATION: For more information you may contact Stephen Bennett at 517-394-1439 (after 6 PM), or 517-377-1676 (8 to 5 weekdays).

PRESIDENT'S NOTES

by Steve Bennett

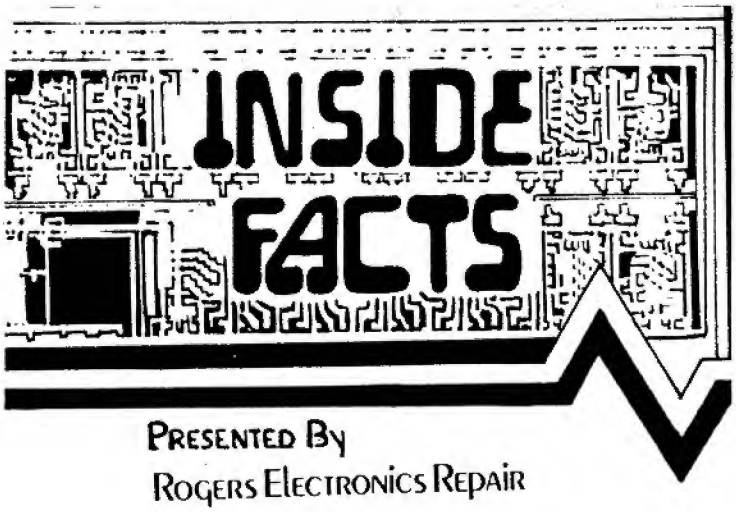
For those of you who were unaware or simply have lost interest after having attended a few of our organizational meetings, the December meeting was very informative. Several new software command modules were reviewed (*Ambulance* by Funware, and *Moon Mine*). I find it personally beneficial to have software reviewed prior to investing my hard-earned bucks in it. Also, a questionnaire was passed out for completion by those in attendance which has provided us with information on topics for upcoming meetings. This questionnaire also provided us with a list of software owned by the various members of the group who are willing to loan, swap or sell unneeded programs. John D. brought in several excess products from Newman Audio/Video which were sold to members at greatly reduced prices (e.g., a brand new TI Thermal Printer for $75.00). Additionally, the group purchased a *Tax/Investment Record-Keeping Command Module* (previously listing for $70.00) to give to the paid member who submits the winning entry for a Logo and Name for our group. This prize *will* be awarded at our regular meeting on January 10, 1984.

A WORD ABOUT DUES: *PAY THEM!!* This will be the first, last and only copy of *Energy* magazine you will receive unless you do. In addition, your name will be dropped from the list we have been compiling for future reference. Now that so many local retailers have stopped stocking TI products, this group and the magazine is YOUR source of information for the Lansing area. If you have other sources of information, please become an active member of the group and share with us. We need your assistance to grow.

Dues may be paid by check, mailed to Lawrence Starr, 3743 Third Street, Grand Ledge MI 48837 (Treasurer), or to Stephen D. Bennett, 1702 W. Edgewood Blvd., Lansing MI 48910 (President).

Also during the December meeting the group voted to purchase a disk head-cleaning system, a cassette head-cleaning system, and a computer vacuum. After purchase, these items will be available for check-out to PAID members through the Library Committee Chairman, Mike Thelen. In addition, Library Committee Co-Chairman Don Armstead has a demagnetizer for tapes, available to PAID members. This is a very fast way to reclaim previously used tapes that are lying around collecting dust.

We are looking forward to a long and prosperous relationship as a member club of the Michigan Computer Consortium. We hope this TI User Group will flourish in the upcoming years.



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It was only in October that we discussed disk drives, but this might not be too soon to bring up the topic again. If you've ever had to do without them you can easily understand what marvelous devices disk drives really are. Let's say you are like me and have had your drive(s) for a couple of years. They are still working well, right? What's that, you say, you get the occasional i/o error? Sometimes you can't format a blank disk? You're having trouble backing up that chock-full disk? If any of these things ring true to you, then you are like me, and both of us need to start paying attention to disk maintenance procedures. Here are some simple tips.

First of all, diskettes are made of the same stuff as audio tape, and your drive head does pretty much the same thing as your tape deck head does: it rubs up against the magnetic medium and reads the signals on it. Most of you know it's necessary to clean and demagnetize your tape deck heads, so it shouldn't be a surprise that your drive head needs the same consideration. Loose iron oxide particles get picked up by the head as time goes by, and eventually that head works about as well as a phonograph needle with a ball of fuzz on it. Well,a disk cleaning kit will go a long way towards keeping your disk drives happy and taking care of business for you. They come in a number of forms. Some use a dry-cleaning technique, analogous to head-cleaning cassettes for your deck. Others involve moistening an absorbent medium with a cleaning fluid. Whichever type you select, you can just insert the cleaning disk and let it run in the drive for a few seconds, but if you do this, eventually one 'track' on the cleaning disk will become soiled, and you'll have to get a new cleaning kit. The clever thing to do is to write a little BASIC program that will result in the head's contacting the cleaning medium on a different track with each pass. This method will greatly improve the effectiveness of the cleaning procedure, and you'll get a lot more applications from the kit before replacement is necessary.

There are a lot of different opinions on how often drive heads should be cleaned. There's always those who say, "If it ain't broke, don't fix it", but most experts will agree that it should be done at some regular interval. I favor a monthly cleaning schedule, probably because the first of a month is easy to remember for this chore. Heavy users may want a more frequent plan. The important thing is to set up a schedule you can keep.

Sometimes simple head cleaning is not enough to get your drives back on track, if you'll excuse the slight pun. All drives have speed adjustment points, which means their speeds can vary. When this happens you'll have lots of trouble transferring files from one drive to another, or reading a disk written by someone else's machine. Clearly, the solution to this problem is to adjust the speed of the drive. If you want to try this yourself there are two things to look for. Most drives have strobe disks pasted onto their flywheels. There will be two rings of marks on the disk: one for our 60 cycle electricity, and one for the 50 cycle standard of many foreign countries (notably Japan). Shine a fluorescent light on the strobe disk and try to make the 60 cycle ring of marks seem to stand still by fiddling with the second thing you need to look for: the speed adjustment. This gadget is found in a number of different places, depending on the drive manufacturer. If you are lucky you'll have a diagram or service manual to help you find the right spot. If not, or if you're all thumbs or just 'chicken', a good computer repair technician can clean, lube and adjust the speed on a disk drive for less than the price of a box of diskettes. Barring some traumatic event, once a year should be often enough for this procedure. Then you'll be all set for many more trouble-free hours of computing. See you next month.

Matt Cantrell

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